Job Description: Postdoctoral Position opportunity

About TransPod

At TransPod, we are developing the "FluxJet", an electrically-powered vehicle to travel up to 1,200 km/h for passenger and cargo transportation between cities. Based on groundbreaking research, we are working to create ultra-high-speed ground transportation, with sustainable infrastructure, for a more connected world.

Who You Are

We seek top engineers, inventors, builders, and researchers, to work with like-minded people on our team from around the world. You have a passion for creating, designing, and building. You are practical and always figure out the most straightforward and best solution that can do the job well, and you make it work elegantly, robustly, and reliably. You can also use sophisticated algorithms and math when it's needed. You are inspired by exciting physics and new inventions and love creating new things, making things work, and reaching the highest challenge.

What You'll Do

You will contribute to the FluxJet vehicle technology, as part of the communication team, working with professors and engineers across Canada and Europe. An advanced communication system is being developed for high-speed aerospace vehicles, including a novel modulation scheme and communication hardware which functions in extreme conditions similar to upper-atmosphere flight, with critical functions for life safety.

Your first mission is to develop efficient and accurate models for radio wave propagation to/from FluxJet vehicles confined in metallic tunnels and guideways with complex geometries. You will also contribute to additional physics modeling and electrical engineering research with the company.

You will be supervised by TransPod (the company) and co-supervised by a professor at the university.

Experience & Qualifications

- Graduated with a Ph.D. in electrical engineering related to electromagnetics and communication
- Skills for RF wave propagation:
    - theoretical analysis: geometrical optics, modal theory
    - simulation by ray-tracing approaches.
- Candidates must have an excellent theoretical (mathematical) and practical understanding and be able to use their practical and theoretical experience in creating designs.
- Experience in Software Refined Radio equipment, preferably NI/GNU Radio USRPs.

- Fluency in spoken and written English and French.

Some additional optional nice-to-have skills include:

- Familiarity with standards for mission-critical communication from the aviation industry, space industry, and/or railway industry
- Familiarity with EM compliance
- RF antennas: theoretical analysis, simulation, and design experience
  - Various antenna designs, including MIMO arrays
  - Drive circuits: including custom design and off-the-shelf
- Experience designing and building devices, with electronics, embedded code, and/or mechanics. You are encouraged to send a portfolio which shows previous things you've built (entirely by yourself – or in cases where it was with a team, you should write down which part of the project you did yourself).
- Programming: numerical/scientific computing, microcontroller programming, FPGA, HDL, hardware bus interfacing & interrupts, fixed point math, low-level logic
- EM for motors and transformers (simulation or design)
- Additional physics knowledge, such as, for example, plasma dynamics, superconductivity, vacuum physics, lasers, optics, aerodynamics and simulation
- Additional electrical engineering knowledge, such as power electronics, systems control, signal processing, digital/analog systems.

Primary location: Poitiers, France
Schedule: Full-time
Term: Postdoctoral research period of one year, renewable to another one year at TransPod Inc. in collaboration with XLIM Laboratory and University of Poitiers, followed by the possibility to extend as a permanent position at TransPod Inc.

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